TULMAR
ENGINEERED FOR PROTECTION

INFLATING/DEFLATING KIT OPERATING INSTRUCTIONS

INSTRUCTIONS D'OPÉRATION POUR L'ENSEMBLE DE GONFLAGE / DÉGONFLAGE

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USER MANUAL P/N 5685-007

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Revision History / Historique des révisions

This revision history serves as a record of changes to this manual. The record includes the revision letter, the date of the revision, the page(s) affected, and a brief description of the change.

L'historique des révisions doit servir comme un enregistrement des modifications à ce manuel. Le dossier comprend la lettre de la révision, la date de la révision, la/les page(s) affectées et une brève description du changement.

Rev	Date	Pages affected Pages affectées	Brief Description Courte description
A	March 31, 2014	All	Original release

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1. INTRODUCTION

These Operating Instructions describe the Inflating/Deflating Kit and provide instructions for operation by the user.

2. EQUIPMENT SAFETY

The following describes potential hazards or procedures that, if not performed correctly, can result in damage to the equipment or personal injury:

a) While connecting any adaptor with the air line, make sure it is connected securely. Accidental dislodging of the air line may cause a personal injury.

3. EQUIPMENT OVERVIEW

3.1. DESCRIPTION OF EQUIPMENT

The Inflating/Deflating Kit includes the equipment necessary for:

a) Inflating of the life rafts with MIRADA and/or PAM inflating valves.
b) Inflating of the life rafts equipped with oral valve.
c) Quick deflating of the life rafts with MIRADA and/or PAM inflating valves.
d) Quick deflating of the life rafts equipped with oral valves.

1. INTRODUCTION

Ces instructions d'opération décrivent l'ensemble de gonflage / dégonflage et disposent les consignes pour son opération par un usager.

2. SÉCURITÉ DE L'ÉQUIPEMENT

L'information qui suit décrit les dangers potentiels ou procédures qui, si non suivies correctement, peuvent causer des dommages à l'équipement ou blessures à l'usager.

a) En raccordant tout adaptateur au tuyau d'air, assurez-vous qu'il soit bien connecté. Une déconnection accidentelle du tuyau d'air pourrait entrainer des blessures à l'individu.

3. APERÇU DE L'ÉQUIPEMENT

3.1. DESCRIPTION DE L'ÉQUIPEMENT

L'ensemble de gonflage / dégonflage comprend tous les outils nécessaires afin de:

a) Gonfler les radeaux de sauvetage munis des soupapes MIRANDA et/ou PAM.
b) Gonfler les radeaux de sauvetage munis des soupapes de gonflement à bouche.
c) Dégonfler rapidement les radeaux de sauvetage munis des soupapes MIRANDA et/ou PAM.
d) Dégonfler rapidement les radeaux de sauvetage munis des soupapes gonflement à bouche.

3.2 TECHNICAL DATA

PART NO.	DESCRIPTION	MATERIAL
5685-001	KIT, INFLATE/DEFLATE RAFT	
5685-002	TOOL, VACUUM GENERATOR	ALUMINUM, NICKEL PLATED BRASS, ZINC PLATED STEEL
5685-003	TOOL, VALVE ADAPTER TYPE 1 (MIRADA)	NYLON, NICKEL PLATED BRASS, ZINC PLATED STEEL
5685-004	TOOL, VALVE ADAPTER TYPE 2 (PAM)	NICKEL PLATED BRASS, ZINC PLATED STEEL, STAINLESS 304
5685-009	TOOL, VALVE ADAPTER TYPE 3 (ORAL VALVE)	NICKEL PLATED BRASS, ZINC PLATED STEEL, STAINLESS 304, NYLON (BLACK)
5685-005	TOOL, MANIFOLD	NICKEL AND CHROME PLATED BRASS, BRASS, ZINC PLATED STEEL, STAINLESS 304, EPDM, PLASTIC
5685-006	CARRYING CASE C/W FOAM	POLYPROPYLENE, POLYETHYLENE
5685-007	INSTRUCTION, MANUAL	
5685--008	LIST, EQUIPMENT	
5685-010	HOSE, 3/8", 4FT LG	RED RUBBER
5685-011	DIGITAL GAUGE (SPARE)	

3.2. DONNÉES TECHNIQUES

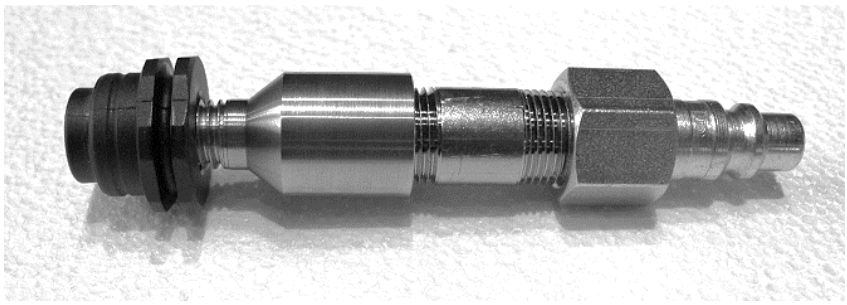
NO. PIÈCE	DESCRIPTION	MATÉRIAU
5685-001	ENSEMBLE, GONFLAGE / DÉGONFLAGE DU RADEAU	
5685-002	OUTIL, GÉNÉRATEUR DU VIDE	ALUMINIUM, LAITON NICKELÉ, ACIER ZINGUÉ
5685-003	OUTIL, ADAPTATEUR DE SOUPAPE DE TYPE 1 (MIRANDA)	NYLON, LAITON NICKELÉ, ACIER ZINGUÉ
5685-004	OUTIL, ADAPTATEUR DE SOUPAPE DE TYPE 2 (PAM)	LAITON NICKELÉ, ACIER ZINGUÉ, ACIER INOXYDABLE 304
5685-009	OUTIL, ADAPTATEUR DE SOUPAPE DE TYPE 3 (SOUPAPE DE GONFLEMENT À BOUCHE)	LAITON NICKELÉ, ACIER ZINGUÉ, ACIER INOXYDABLE 304, NYLON (NOIR)
5685-005	OUTIL, COLLECTEUR	LAITON NICKELÉ ET CHROMÉ, LAITON, ACIER ZINGUÉ, INOX 304, PLASTIQUE EPDM
5685-006	MALETTE DE TRANSPORT AVEC MOUSSE	POLYPROPYLÈNE, POLYÉTHYLÉNE
5685-007	INSTRUCTIONS D'OPÉRATION	
5685-008	LISTE DES ÉQUIPEMENTS	
5685-010	TUYAU, 3/8 PO , 4 PI LONG	CAOUTCHOUC ROUGE
5685-011	JAUGE NUMÉRIQUE (EXTRA)	

3.3. EQUIPMENT COMPONENTS

3.3 COMPOSANTES DE L'ENSEMBLE

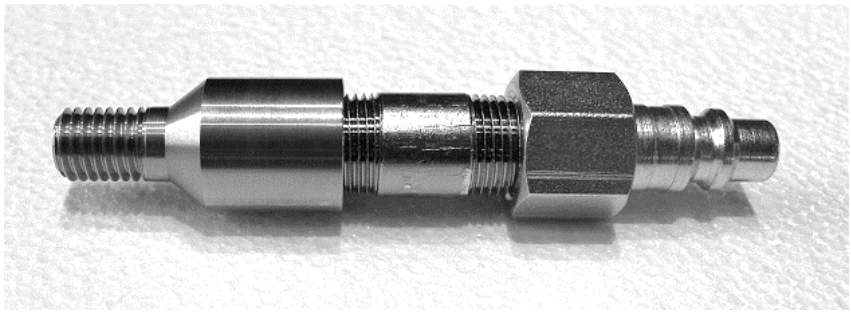
Vacuum Generator Tool p/n 5685-002

Outil générateur de vide p/n 5685-002



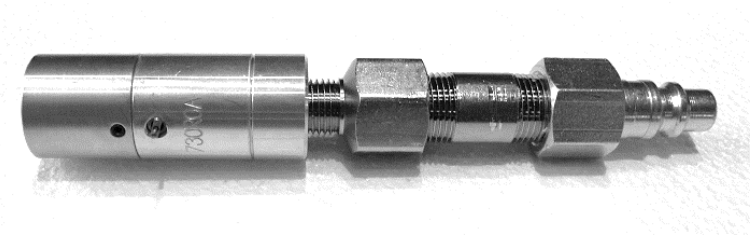
Valve Adapter Type 1 (MIRADA) p/n 5685-003

Adaptateur de soupape de type 1 (MIRANDA) p/n 5685-003



Valve Adapter Type 2 (PAM) p/n 5685-004

Adaptateur de soupape de type 2 (PAM) p/n 5685-004



Valve Adapter Type 3 (ORAL VALVE) p/n 5685-009

Adaptateur de soupape de type 3 (SOUPAPE DE GONFLEMENT À BOUCHE) p/n 5685-009

Manifold p/n 5685-005

Outil collecteur p/n 5685-005

Carrying Case with Foam p/n 5685-006

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Operating Instructions p/n 5685-007

Instructions d'opération p/n 5685-007

Equipment List p/n 5685-008

Liste des équipements p/n 5685-008

Hose 3/8", 4 ft LG p/n 5685-010

Tuyau, 3/8 po, 4 pi long, p/n 5685-010

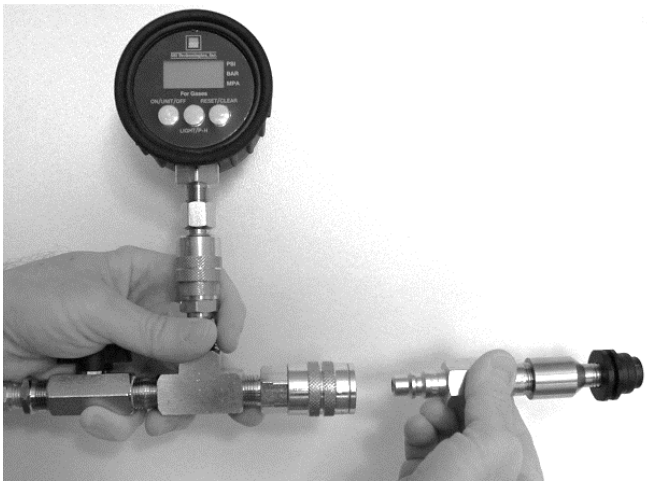
Digital Gauge (Spare) p/n 5685-011

Jauge numérique (extra) p/n 5685-011

4. EQUIPMENT OPERATION

Inflating:

a) Connect the Valve Adapter Type 1 (003) or Type 2 (004) to the Manifold (005) using 3/8” quick connector (coupling).



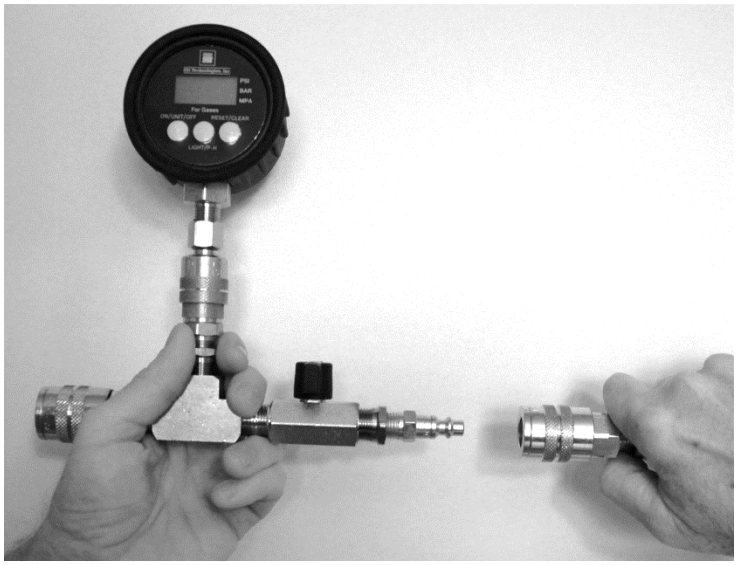
b) Connect the industrial airline to the Manifold (005) using ¼” quick connector (coupling).

4. OPÉRATION DE L’ÉQUIPEMENT

Gonflage:

a) Raccordez l’adaptateur de soupape de type 1 (003) ou de type 2 (004) à l’outil collecteur (005) en utilisant un raccord rapide de 3/8 po (accouplement).

b) Raccordez le tuyau d’air industriel à l’outil collecteur (005) en utilisant un raccord rapide de ¼ po (accouplement).



c) Connect the adapter Type 1 (003) or Type 2 (004) to the raft inflating valve.

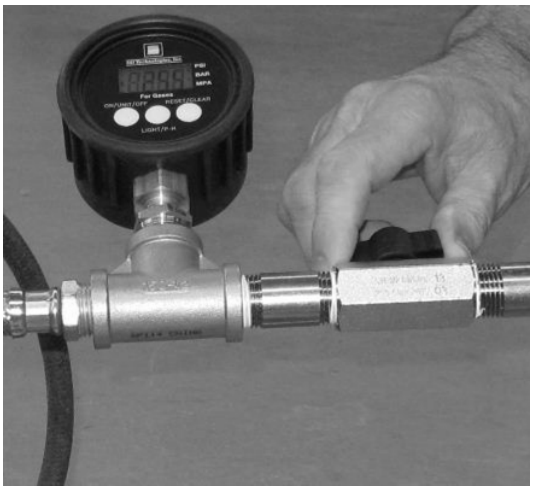
c) Raccordez l'adaptateur de type 1 (003) ou de type 2 (004) à la soupape de gonflement du radeau.

d) Connect the adapter Type 3 (009) to the raft oral valve.

d) Raccordez l'adaptateur de type 3 (009) à la soupape de gonflement à bouche du radeau.

e) Open slowly Ball Valve and keep inflating until air pressure reach the level as specified by the raft Operation Manual. Do not exceed 30 psi pressure as it may damage the pressure gauge.

e) Ouvrez lentement la valve à air de l'outil collecteur et gonflez jusqu'à ce que la pression indiquée sur le manomètre atteigne le niveau spécifié dans le manuel d'opérations du radeau de sauvetage. Ne pas excéder une pression de 30 psi, car la jauge de pression pourrait être endommagée.



f) Close the Ball Valve, disconnect the ¼" airline and leave the Manifold (005) connected to the raft inflating valve for required period of time for evaluation of the leakage rate.

g) Use rubber hose (010) for air line extension if necessary.

f) Fermez la valve d'air du collecteur, déconnectez le tuyau de ¼ po et laissez l'outil collecteur (005) raccordé à la soupape de gonflement du radeau de sauvetage pour la période spécifiée à l'évaluation du débit d'échappement.

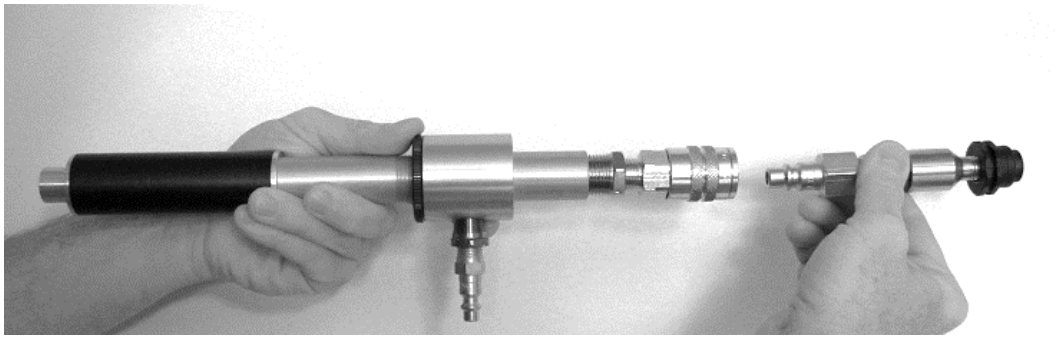
g) Utilisez le tuyau en caoutchouc (010) comme rallonge d'alimentation d'air, au besoin.

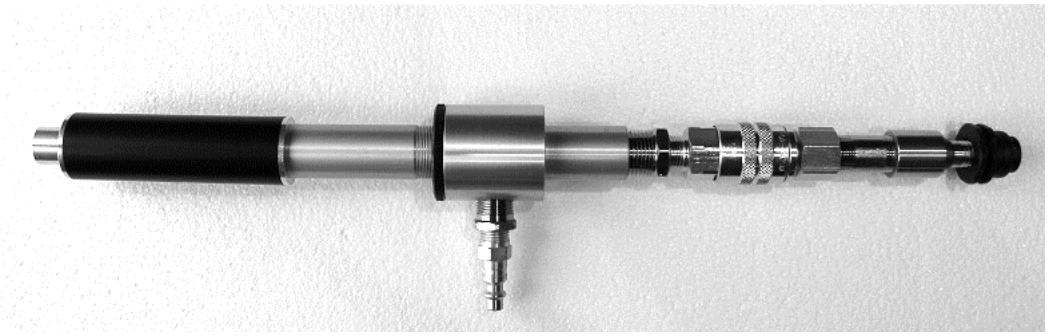
Deflation:

a) Connect the Valve Adapter Type 1 (003) or Type 2 (004) to the Vacuum Generator (002) using 3/8" quick connector (coupling).

Dégonflement:

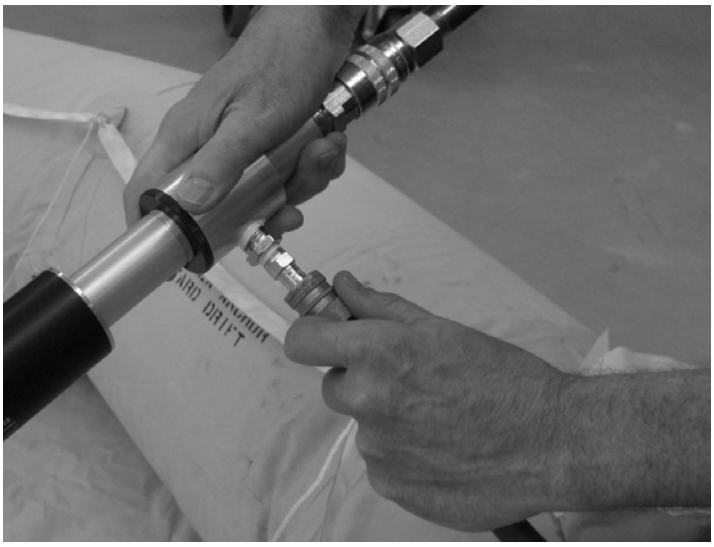
a) Raccordez l'adaptateur de soupape de type 1 (003) ou de type 2 (004) au générateur du vide (002) en utilisant un raccord rapide de 3/8 po (accouplement).





b) Connect the industrial airline to the Vacuum Generator (002) using ¼" quick connector (coupling). Vacuum Generator will be automatically activated.

b) Raccordez le tuyau d'air industriel au générateur du vide (002) en utilisant le raccord rapide de ¼ po (accouplement). Le générateur du vide sera activé automatiquement.



c) Connect the adapter Type 1 (003) or Type 2 (004) to the raft inflating valve. Continue evacuate air from the raft until the raft buoyancy chamber is completely deflated.

c) Raccordez l'adaptateur de type 1 (003) ou de type 2 (004) à la soupape de gonflage du radeau de sauvetage. Continuez l'évacuation d'air jusqu'à ce que la chambre de flottaison soit entièrement vide.

d) Connect the adapter Type 3 (009) to the raft oral valve. Continue evacuate air from the raft until the raft buoyancy chamber is completely deflated.

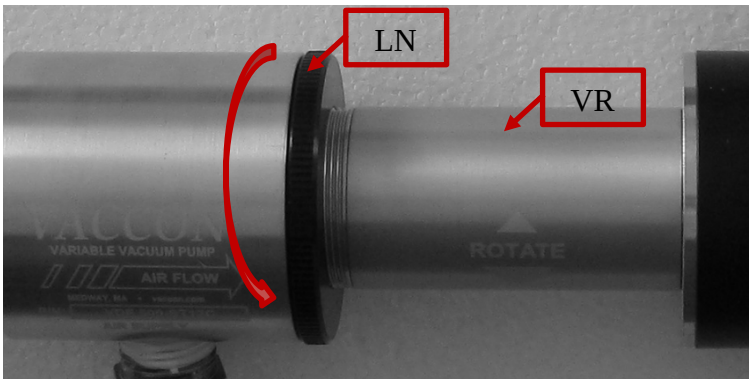
d) Raccordez l'adaptateur de type 3 (009) à la soupape de gonflement à bouche du radeau. Continuez l'évacuation d'air du radeau jusqu'à ce que la chambre de flottaison soit entièrement vide.

e) Disconnect the airline.

e) Déconnectez le tuyau d'air.

f) Vacuum Generator (002) set up.

f) Préparation du générateur du vide (002).



- Unlock the locking (LN) nut by turning counter clockwise.
- Rotate a vacuum regulator (VR):
  - Clockwise to decrease the air flow
  - Counter clockwise to increase the air flow
- Lock the locking nut by turning clockwise.

- Ouvez l'écrou de verrouillage (LN) en le tournant au sens contraire des aiguilles d'une monre.
- Tournez le générateur du vide (VR) :
  - Dans le sens des aiguilles d'une monre pour moins d'air
  - Dans le sens contraire des aiguilles d'une monre pour plus d'air
- Verrouillez l'écrou en le tournant dans le sens des aiguilles d'une monre.

5. CARE AND MAINTENANCE

The Inflating/Deflating Kit requires very little maintenance. However, proper care of the tool will allow it to continue operating at a high level of performance and will ensure its long life. Always check the connections if they're secure and tight. Always turn off the electronic pressure gauge when not in use.

5.1. CLEANING

1. Use a clean, lint-free cloth to remove dust, moisture, and debris from the tool.
2. Make sure that all removable parts are secure and in place.
3. When the tool is not in use, it should be stored in the toolkit box.
4. Store the tool kit in a clean and dry area.

5. SOINS ET MAINTENANCE

L'ensemble de gonflage / dégonflage exige peu d'entretien. Cependant, le soin de l'ensemble permettra un fonctionnement continu et optimal de l'ensemble et assurera également sa longévité. Vérifiez toujours la sécurité et l'étanchéité des connections. Éteignez toujours la gauge de pression électronique lorsque non utilisée.

5.1. NETTOYAGE

1. Utiliser un linge propre, sans peluche, pour essuyer la poussière, l'humidité et les débris de chacune des composantes utilisées.de
2. Assurez-vous que toutes composantes amovibles soient sécures et bien en place.
3. Lorsque l'outil n'est pas utilisé, il devrait être rangé dans a malette de transport avec mousse .
4. Entreposer l'outil dans un endroit propre et sec.

SSI Technologies – Application Note PS-AN5

MediaGauge™ (Model MGA-9V) Digital Pressure Gage

Product Overview

Product Description

The MediaGauge™ Model MGA-9V is a NEMA 4X rated stand alone 9V battery operated multi-functional digital pressure gage. The MGA-9V digital pressure gage consists of a piezoresistive pressure sensing element, signal conditioning circuitry for temperature and calibration compensation, a 304L stainless steel pressure port and a LCD back lit display. The MGA-9V is a lower cost digital pressure gage in the MediaGauge™ family with accuracy **of ± 1.0 % full scale *for dry air and non-corrosive gas applications only.***

The MediaGauge™ MGA-9V comes standard with a variety of keypad operated functions – multiple pressure unit display reading (PSI, BAR or MPA); memory storage of maximum peak pressure reading; and zero adjustment.

The MGA-9V digital pressure gage has better accuracy, longer life and *standard* multiple functions which make it a better choice than mechanical pressure gages. These compact 2 ½ inch, robust gages measure pressures from **30 PSI to 300 PSI.**

Product Features

- **Accuracy:** ± 1.0 % Full Scale
- **Pressure Ranges:** 30, 100, 300 PSI
- **Keypad Operated Functions:** Auto zero and peak hold
- **Operating Temperature:** -10°C to 60°C
- **Storage Temperature:** -20°C to 85°C

MediaGauge™ *Model MGA-9V with rubber boot option*

- **Typical Applications**: Process Control; Compressors
- **NIST traceable certificates available**
- **NEMA 4X Rating**
- **Chemical Compatibilities:** Non-corrosive gases and dry air
- **LCD Display Battery Saver Mode:** MGA-9V automatically powers down after 3 minutes.
- **Multiple Pressure Units:** PSI, BAR, MPA (kg/cm²)
- **Compact, Robust Package:** 2 ½ inches with black ABS Thermoplastic case

SSI Technologies – Application Note PS-AN5

MediaGauge™ (Model MGA-9V) Digital Pressure Gage

Product Overview

Measurement Technology

In general, pressure measurement technology translates a force from an induced pressure into an electrical quantity. In digital pressure gages, the electrical quantity is then translated into pressure units and digitally displayed.

The SSI's MediaGauge™ MGA-9V digital pressure gage includes an 304L stainless steel input pressure port, a piezoresistive pressure sensing element, signal conditioning circuitry for temperature and calibration compensation, and a LCD that displays the pressure measured in either PSI, BAR or MPA (kg/cm²) units.

The piezoresistive sensing element contains a silicon crystal semiconductor. Strain gages (resistive elements) in the silicon are used in a Wheatstone Bridge circuit. When pressure is applied, the resistivity of the strain gages changes proportional to the pressure applied. One leg of the bridge measures the input pressures port. The other leg of the bridge is connected to the reference port (vacuum pressure 0 PSI) the input pressure port is compared to.

Since piezoresistive pressure sensors are sensitive to changes in temperature, the MediaGauge™ uses signal conditioning to compensate for temperature and calibration. The output signal is then converted into one of 3 user selectable forms (select units with the ON/UNIT/OFF button):

1) PSI
2) BAR
3) MPA (kg/cm²)

The MediaGauge™ MGA-9V will display the pressure reading after the ON/UNIT/OFF button is depressed. The pressure measurement reading is updated 3 times per second.

MediaGauge™ MGA-9V Panel

The MediaGauge™ MGA-9V panel has a LCD display and three multi-functional buttons – ON/UNIT/OFF; LIGHT/P-H (Peak-Held) and RESET/CLEAR.

The ***ON/UNIT/OFF button*** is used to display the pressure reading; switch between pressure units (PSI; BAR; and MPA) and to power down the unit.

To power on the unit: Press the ON/UNIT/OFF button. The MediaGauge™ MGA-9V has a battery saver mode and will automatically shut itself off after 5 minutes.

To display the pressure reading in a different pressure unit: Continue to press the ON/UNIT/OFF button until the arrow in the LCD points to the pressure units desired.

To manually power down the unit: Press the ON/UNIT/OFF button and hold down for 3 seconds until OFF is displayed and then release the button.

The ***LIGHT/P-H (Peak-Held) button*** is used to turn the LCD LIGHT on/off and to display the maximum peak pressure the unit has measured.

To turn the LCD LIGHT on: Press the LIGHT/P-H button once.

To turn the LCD LIGHT off: Press the LIGHT/P-H button again.

SSI Technologies – Application Note PS-AN5

MediaGauge™ (Model MGA-9V) Digital Pressure Gage

Product Overview

To see the maximum peak pressure the unit has measured: Press and hold down the LIGHT/P-H button for 3 seconds. The maximum pressure reading will be blinking. If the maximum pressure read was over the unit's maximum pressure range, o.L will be blinking on the display.

To return to the current pressure reading: Press the LIGHT/P-H button and hold down for 3 seconds.

The ***RESET/CLEAR button*** is used to reset the gage to whatever pressure is currently being applied to the port and to clear the stored maximum peak pressure reading.

To reference your MediaGauge™ digital pressure gage to the input port: Press and hold the RESET/CLEAR button for 3 seconds. The MediaGauge™ MGA-9V will now be reference to your input port. For example, if you have 20 psi on the display and then you press and hold the RESET/CLEAR button for 3 seconds the display will show 0.0 psi. A measurement of 30 psi would then read as 10 psi on the display.

To reset the MediaGauge™ digital pressure gage: Make sure the input port is either disconnected or connected to a 0 psi input. Press and hold down the RESET/CLEAR button for 3 seconds.

To clear the maximum peak pressure reading: Press and hold down the LIGHT/P-H button for 3 seconds until the maximum pressure reading appears on the LCD (it will be blinking). Release the LIGHT/P-H button. Press and hold down RESET/CLEAR button for 3 seconds.

Installation/Mounting

1) Mount the MediaGauge™ MGA-9V digital pressure gage on a suitable (1/4" NPT) female fitting. Use Teflon tape or pipe dope to seal the threads.

2) Do no over tighten. Torque to 150 in lbs +/- 1 in lb.

Electrical Specifications

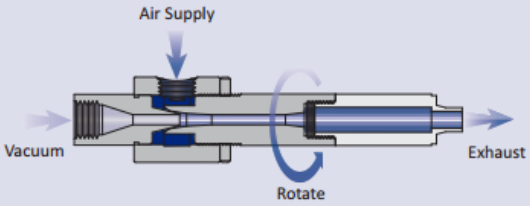
Supply Voltage	9V Battery
Response Time	< 1 ms
Accuracy	±1.0 FS
LCD Resolution (30 PSI)	0.01
LCD Resolution (100; 300 PSI)	0.1
Proof Pressure	3 X Full Scale
Burst Pressure	10 X Full Scale or 15,000 psi whichever is less
Operating Temperature Range	-10° to 60°C (14° to 140°F)
Storage Temperature Range	-20° to 85°C (-4°to 185°F)

VACCON VACUUM PRODUCTS

Operating Instructions: VDF Series Variable Vacuum / Variable Flow Pump

Principles of Operation

Changing the annular gap between the venturi nozzle and the diffuser varies the performance of the VDF pump. Rotating the diffuser section counter clockwise enlarges the opening, allowing more compressed air to flow through the pump and thereby increasing both the vacuum flow and the vacuum level. Likewise, rotating the diffuser section clockwise reduces the opening, allowing less compressed air to flow through the pump and thereby decreasing both the vacuum flow and the vacuum level. The result is a variable vacuum pump—adjustable to meet your exact application requirements.



Operating and Installation Instructions:

1. Loosen jam nut counter-clockwise and rotate exhaust body clockwise until closed; jam nut should be loose on exhaust body.
2. Attach air line to air supply port. Attach vacuum line or attach vacuum cup to vacuum port. See chart on the next page for the minimum recommended sizes.
3. Turn on compressed air. VDF will generate vacuum flow immediately.
4. Rotate exhaust body counter-clockwise to the desired vacuum level or vacuum flow using rotation charts on the next page – charts are based on 80 PSI [5.5 bar] and 60 PSI [4.1 bar]. Pumps will achieve maximum vacuum levels at any pressure above 50 PSI [3.4 bar] (a pressure regulator is not required).
5. After setting desired vacuum level, tighten the jam nut by rotating clockwise.

Notes:

Maximum vacuum flow is achieved at 15" Hg – further rotation will increase the vacuum level, while the flow remains constant

For the VDF 375 and larger models, it may be necessary to turn the compressed air off while making adjustments to relieve pressure on the threads to make rotation easier.

"Preset" VDF's are permanently locked at the factory at a customer specified vacuum level and are not adjustable.

VDF Model	Maximum Vacuum Flow (SCFM)	Air Consumption (SCFM)	Maximum Vacuum Flow (LPM)	Air Consumption (LPM)
VDF 100	2.0	1.3	56.6	36.8
VDF 150	3.2	2.4	90.6	68.0
VDF 200	6.0	4.7	169.9	133.1
VDF 250	10.0	8.3	283.2	235.1
VDF 375	30.0	17.0	849.6	481.4
VDF 500	60.0	28.0	1699.2	793.0
VDF 750	120.0	44.0	3398.4	1246.1